

Remarks

The Examiner has rejected applicants' claims 1-7, 12, 13 and 15-18 under 35 USC 103(a) as unpatentable over the Izumi, et al. patent (US Patent No. 6,160,673) taken in view of the Twitchell, et al patent (US Patent No. 6,281,936). Claims 8, 9 and 11 have been rejected under 35 USC 103(a) based on the latter patents taken with the Williams patent (US Patent No. 6,344,749). Finally claim 14 has also been rejected under 35 USC 103(a) based on the Izumi, et al. and Twitchell, et al. patents taken with the Limberg, et al. patent (US Patent No. 6,426,780). These rejections are respectfully traversed.

Applicants' independent claim 1 recites a reproducing apparatus, comprising: reproducing means for reproducing an information signal; equalizing means for controlling a group delay of the information signal reproduced by said reproducing means; converting means for sampling the information signal output from said equalizing means and for converting the information signal into a digital signal composed of a plurality of bits per sample; detecting means for converting the digital signal output from said converting means into a n-values signal per sample; and control means for controlling a group delay characteristic of said equalizing means by using the digital signal to be input to said detecting means and the n-values signal output from said detecting means. Independent claim 16 has similar features.

In applicant's invention of claims 1 and 16 a reproducing means reproduces an information signal and an equalizing means controls a group delay of the information signal reproduced by the reproducing means. A converting means converts the information signal output from the equalizing means into a digital signal composed of a plurality of bits per sample. A detecting means then converts the digital signal output from the converting means into a n-values signal per sample. Further, a group delay characteristic of the equalizing means is

controlled by using the digital signal to be input to the detecting means and the n-values signal output from the detecting means. Such a construction is not taught or suggested by the cited art of record.

The Examiner has argued that the Izumi, et al. patent discloses a reproducing apparatus having the following:

“Reproducing means for reproducing an information signal (Fig. 5. Col. 11 line 38-48;
Equalizing means for controlling a group delay of the information signal reproduced by the reproducing means (Fig. 5. Col 11 line 38+);
Detecting means for detecting a digital signal from the information signal reproduced by said reproducing means (Fig. 1 reproduction amplifier 3 as described in Col. 11 line 38-48);
Control means for controlling a group delay characteristic of said equalizing means by using the reproduced information signal to be inputted to said detecting means and a detection result of said detecting means. (Fig. 5. Col 11 line 38-48).”

The Examiner, however, has stated that the Izumi, et al. patent fails to disclose “a converting means for sampling the information signal output from said equalizing means and for converting the information signal into a digital signal composed of a plurality of bits per sample.” The Examiner then apparently cites the Twitchell, et al. patent for this feature and argues as follows in an attempt to arrive at applicants’ claimed invention:

“Twitchell et al discloses a transmission system wherein as seen in Figure 1 conversion and equalization of the signal is processed and thereby turns the signal into a digital signal by the A/D converter 80 and further sent to the controller for further processing. Twitchell et al teaches Izumi et al processing of the signal for converting the signal through equalizing and

converting of the information signal into a digital signal. Therefore, it would be obvious to one of ordinary skill in the art at the time of the invention to use the reproducing apparatus, as disclosed by Izumi et al, and further incorporating a system that equalizing and converts the signal into a digital signal, as described by Twitchell et al.”

The Examiner’s arguments, however, fail in a number of critical respects. In particular, the Examiner, while attempting to address the converting means of applicants’ claims with the Twitchell, et al. patent, has failed to address the added feature of the detecting means of the claims. That is, the Examiner has not shown where in the patents there is a detecting means for converting the digital signal output from said converting means into a n-values signal per sample. The only detecting means mentioned by the Examiner is the reproduction amplifier 3 in the Izumi, et al. patent and this is stated as detecting a digital signal from the information signal and not as converting the digital signal output from a converting means into an n-values signal per sample. Moreover, that Examiner has also not shown where the patents disclose a control means for controlling a group delay characteristic of the equalizing means by using the digital signal to be input to the detecting means (i.e., the digital signal derived from converting the equalizer output signal) and an n-values signal derived from the digital signal.

It is evident from the Izumi, et al. patent that it is the equalizer 4 which acts on the reproduced signal from the reproduction amplifier 3 and that the output of the equalizer is then converted by the A/D converter 5 to a digital signal. However, there is no use of the digital signal from the A/D converter or any signals derived from the A/D converter to derive control signals for the equalizer 4. This is quite clear because the equalizer 4 is stated to be a fixed waveform equalizer.

Instead, the digital signal from the A/D converter 4 and a signal derived from the digital signal are used as input signals for a further waveform equalizer 63. This contrasts with applicants' claimed invention in which an equalizer which acts on the reproduced signal is, in fact, controlled based on a digital signal converted from the equalizer output signal and an n-values signal derived from the digital signal.

The system of the Izumi, et al patent, therefore, whether one considers the equalizer 4 or the equalizer 63 simply cannot be equated to applicants' claimed invention. Likewise, in the Twitchell, et al. patent there is no teaching or suggestion of a system in which an equalizer which acts on the reproduced signal is, in fact, controlled based on the digital signal converted from the equalizer output signal and an n-values signal derived from the digital signal.

Applicants' amended claims which recite these features thus patentably distinguish over the combination of the Izumi, et al. and Twitchell, et al. patents. Moreover, the Williams patent and the Limberg, et al. patent fail to add anything to the Izumi, et al. and Twitchell, et al. patents to change this conclusion.

In view of the above, it is submitted that applicants' claims patentably distinguish over the cited art of record. Accordingly, reconsideration of the claims is respectfully requested.

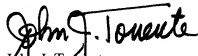
Applicants have included herewith a Request For A Telephone Interview requesting that applicants' undersigned attorney be allowed to conduct a telephone interview to clarify

applicants' invention and the distinctions from the cited art discussed hereinabove.

Dated: May 3, 2007

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Respectfully submitted,



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